

A man wearing a red baseball cap with "Central Michigan University Fisheries Research" on it and green waders is holding a large lake sturgeon horizontally in front of him. The fish is light-colored with dark bands and has a long, pointed snout with whiskers. The background is a wide river with a grassy bank in the distance.

Classification of Lake Sturgeon Spawning Habitat in the Detroit River

Bruce Manny, Greg Kennedy, & Jeff Allen (USGS)
and Jerry McClain (USFWS)

Presented at GLFT lake sturgeon coordination meeting
in Sault St. Marie, MI Nov. 9-11, 2004

- The St. Clair and Detroit Rivers are up to a mile wide, 30-90 feet deep, and moving a 4 miles per hour. All three active spawning sites there are >32 feet deep.
- Hence, classification of sturgeon spawning habitat in such large rivers is a logistic challenge.
- We therefore used large-scale, remote sensing techniques (SSS & UTV) to survey sturgeon spawning habitat in these rivers.

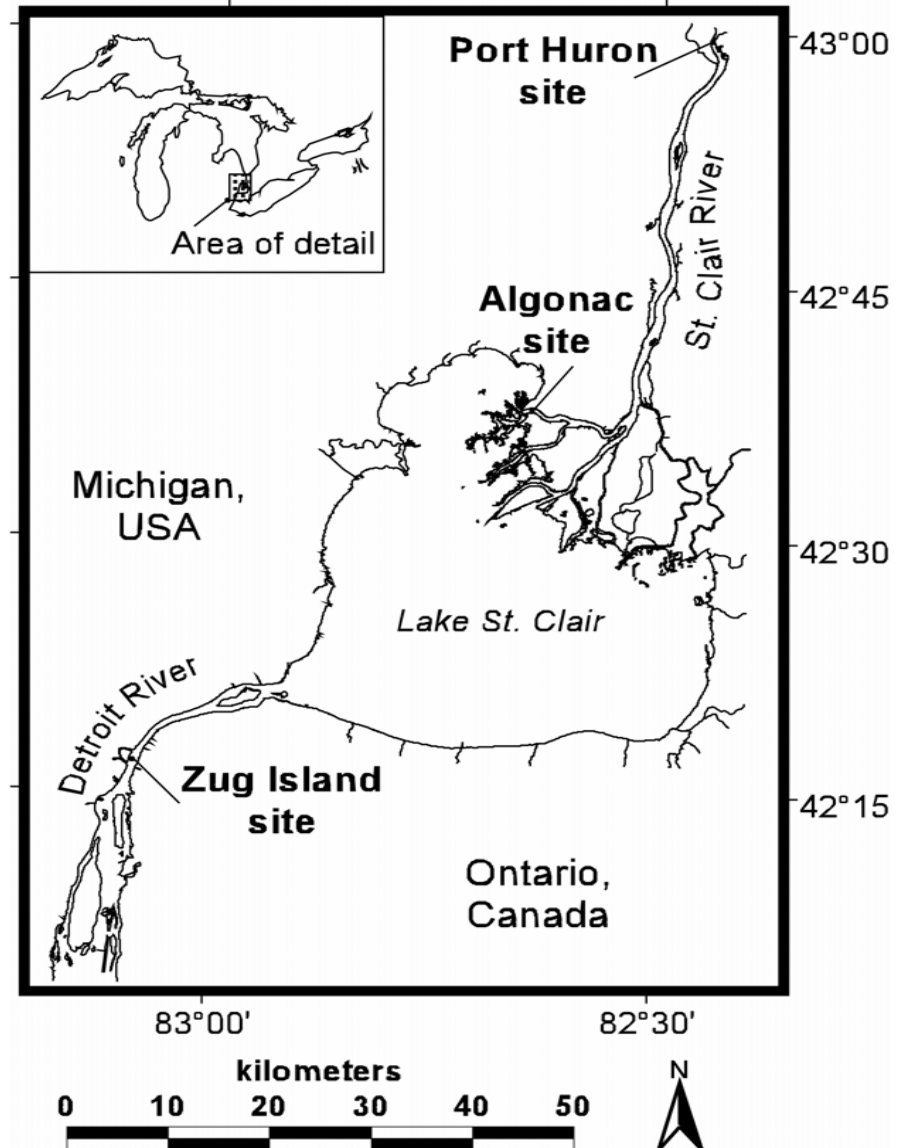






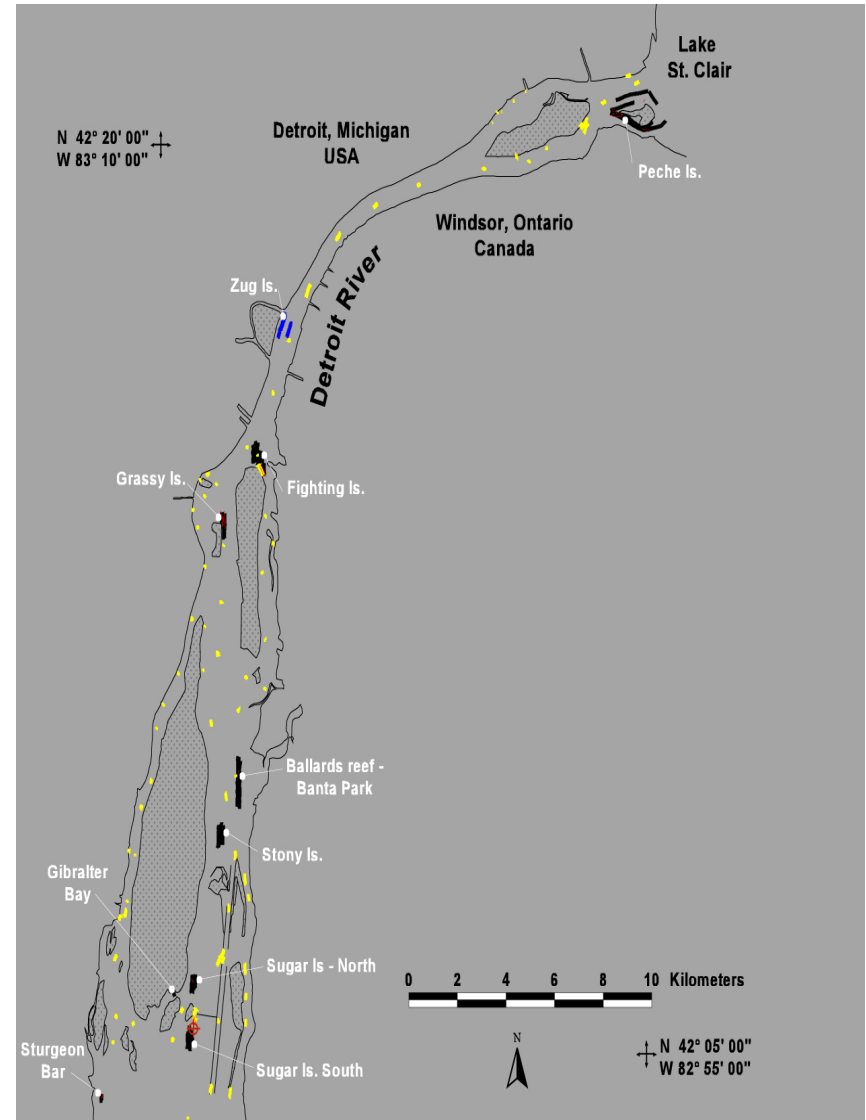
Map of the HEC

- There are three known active spawning sites.
- The Zug Island site is now inundated with residual chlorine from largest CSO in the Great Lakes Basin (peak flow of 13,260 cubic ft/sec).



Map of Detroit River

- Black areas (10) show SSS coverage and yellow areas (86) show UTV coverage.
- I will describe how we use UTV to classify sturgeon spawning habitat suitability.
- Here's a clip of typical video footage:





Camera System



UTV is a quick & easy way to ground truth Side Scan Sonar and describe the arrangement of bottom substrates

Classifications of bottom substrates from UTV are qualitative and subjective.



UTV Video tape clips are:

- Fast flowing, “broad-brush” approach in areas where SSS suggests rock-on-rock substrate exists.
- Duration: 7-61 minutes of video per site
- (1-5 transects over each area of interest).
- Water depth at surveyed sites: 4-38 feet.

Video Tape Interpretation Sheet

information categories

- Site name
- Date video was made
- Dive number, transect number
- Water depth
- Minutes of video coverage
- Start and stop times
- Percentage of each of 6 bottom types present
- Arrangement of 6 bottom types on each other
 - Clay, sand, gravel, cobble, boulder, shells

Video tape Interpretation Sheet

information categories, cont'd

- Percent of river bottom covered by rock on rock spawning substrate
- Position of spawning substrate (Video time)
- Water velocity (high, medium, low)
- Degree of siltation (high, medium, low)
- Condition of spawning substrate (Suitable, Partly impaired, Impaired)
- Percent of bottom covered by plants
- Other biota seen (Exotics, fish, etc.)
- Notes, Interpreter, Date interpreted.

VIDEO TAPE INTERPRETATION FORM

Site: *Sugar Isl-South* Date: *7/8/99* Dive: *1* Water Depth: *8-18 ft*

Bottom Type (%): Clay Sand *75* Gravel *10* Cobble *8* Boulder *5* Shell *2*

Arrangement

Of Bottom Types	Clay	Sand	Gravel	Cobble	Boulder	Shell
On	Clay	✓ <i>4</i>				
(%)	Sand	✓ <i>75</i>	✓ <i>10</i>			✓ <i>4</i>
	Gravel			✓ <i>2</i>	✓ <i>5</i>	
	Cobble				✓ <i>2</i>	✓ <i>2</i>
	Boulder				✓ <i>1</i>	
	Shell					

Amount of bottom at site covered by rock on rock spawning substrate (%): *5*

Position (Video time) of best spawning substrate observed: *13:39:40, 13:42:16*

Start *13:39* Stop: *13:53* Minutes of coverage: *14*

Percent of bottom at site covered by plant growth (%): *10*

Plant Species present (%) *Vallisneria 95, Najas flexilis 2, think of Potamogeton 3*

Other biota seen: Exotic species: *only a few zebra mussels* Fish:

Light penetration: High: ✓ Medium: Low:

Water velocity: High: Medium: ✓ Low:

Degree of siltation: High Medium Low ✓

Condition of spawning substrate: Suitable ✓ Partly impaired Impaired

Notes: *Sandy bottom, wide spaced gravel, couple piles of rocks*
Rocks covered with "fuzz" of filamentous algae

Interpreter: *BAM*

Date interpreted: *10/3/00*

DTR Sturgeon Spawning Habitat

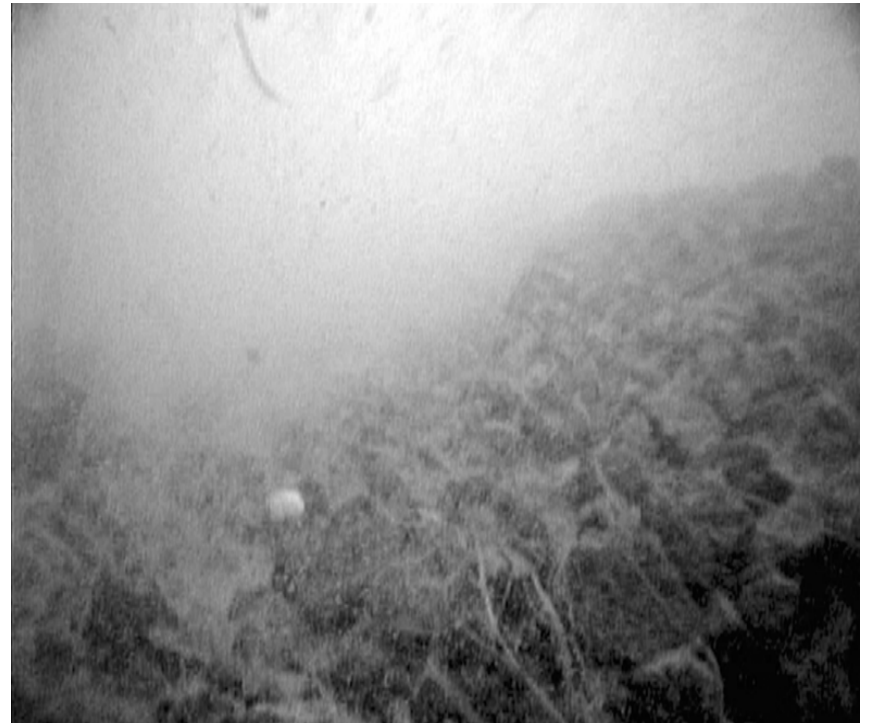
- Surveyed 8 historic, reputed spawning sites in 1999. Based on UTV interpretation,
- Two sites were theoretically suitable spawning habitat, from a physical standpoint.
- Four sites were theoretically less suitable.
- Two sites were theoretically unsuitable.

- None of the historic sites looked like this:

The good stuff (at Port Huron)



The good stuff (at Zug Island)



Video clip



A man wearing a red baseball cap with a logo and a green jacket is holding a large lake sturgeon horizontally in front of him. The fish is light-colored with a dark stripe along its back and has long whiskers. The background is a body of water with a distant shoreline.

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